

claims 1-9 under 35 U.S.C. § 102(e) and then includes 102(e) rejections of claims 10-14. Herein the applicants assume that the Examiner has rejected claims 10-14 for the stated reasons and consequently the applicants have responded to such rejections.

Favorable reconsideration of this application is respectfully requested in light of the following detailed discussion.

Claim Rejections – 35 U.S.C. § 112

The Examiner rejects claims 1-9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention.

As concerns independent claim 1, lines 10-11, the Examiner states that “Applicant cite--- a control operable to change a value of a variable---, it is not clear how a control operable changes a value of a variable. There is no value in the specification in conjunction with the value of the variable. What is the data of the variable? And what kind of variable?”

In response to this 35 U.S.C. § 112, second paragraph rejection of claim 1, it is the applicants' position that claim 1 is clear regarding the element a control operable to change a value of a variable. The applicants draw attention to and attach herewith Webster's New College Dictionary definitions that apply. Thus, a variable can be defined as “anything changeable: esp., a quality or quantity that varies or may vary,” and a control can be defined as “a device used to adjust or control.” In addition, claim 1 specifies that “the color illumination device has a first

functional mode in which the value of the variable determines a color of the illumination light.” Thus, one skilled in the art would understand claim 1 to indicate a device used to adjust or control a changeable quality or quantity that, in a first functional mode of the color illumination device, determines a color of the illumination light. Claim 1 is therefore not indefinite.

Moreover, in a preferred embodiment described in the specification, such control is illustrated as the second control 5 (see Fig. 2), a variable resistor being operable via a rotatable knob shown in Fig. 1, to change the value of the variable, i.e., a voltage. Viewing Figs. 1 and 2, one skilled in the art would readily understand that a voltage, variable from zero (ground) to V_c depending on a rotational position of the knob, is input to the CPU 15, as described for example in the specification at page 16, lines 11-12. In this preferred embodiment, the “variable” is the voltage. Using the input value of the variable (e.g., voltage), the CPU 15 in turn can control different operation parameters, such as the color of the illumination light, depending on the functional mode selected, as described in various parts of the specification, particularly on page 24, lines 8-18.

Therefore, claim 1 is sufficiently definite, particularly pointing out and distinctly claiming the subject matter which the applicants regard as the invention. Consequently, it follows that claims 2-9 are sufficiently definite.

The applicants respectfully submit that, for all the reasons set forth above, claims 1-9 meet all the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, favorable reconsideration of claims 1-9 in this regard is respectfully requested.

Claim Rejections - 35 U.S.C. § 102

The Examiner has rejected claims 1-9 under 35 U.S.C. § 102(e) as being anticipated by Turnbull et al. U.S. Patent 6,132,072 (hereinafter, Turnbull). As stated above, the applicants assume that the Examiner also rejects claims 10-14 under 35 U.S.C. § 102(e) as being anticipated by Turnbull, for reasons stated in the Detailed Action portion of said Office Action. The applicants therefore respond to the rejections to claims 10-14 below.

Specifically referring to claim 1, the Examiner states: "Turnbull ('072) discloses LED assembly having: Regarding claim 1, a plurality of color light sources (14) for emitting lights of at least two different color (see fig. 16); a control unit (22) for controlling the plurality of color light sources (see figs. 1 and 16); a light mixing means or diffuser (29) for mixing the lights emitted from the plurality of color light sources (see figs. 1-2 and 16) to produce an illumination light; and a control (22) operable to change a value [of a value] of a variable, wherein the color illumination device has a first functional mode in which the value of the variable determines a color of illumination light (figs. 1 and 16)."

With regard to the dependent claims 2-9, the Examiner argues specifically as follows:

As to claim 2, the Examiner states: "the color illumination device (see fig. 21) has a second functional mode in which the color of the illumination light is changed periodically in a predetermined pattern and the value of the variable determines a cycle of the periodic light color change, and wherein the color illumination device further includes a switch or controller (22) operable to select one of the functional modes of the color illumination device (see figs. 5-11)."

As to claim 3, the Examiner states: "wherein when the functional mode is changed from the second functional mode to the first functional mode by an operation of the switch or control circuit (22), the illumination light color effected in the second functional mode at the time of the switch operation for the functional mode change is maintained in the first functional mode until the control is operated anew after the functional mode change (see fig. 5-11)."

As to claim 4, the Examiner states: "the color illumination device wherein the control unit (22) includes a memory (U2) for storing the color of the illumination light being produced; and a detector or microprocessor (U1) for detecting an operation of the control (22)."

As to claim 5, the Examiner states: "the color illumination device further having a third functional mode which is different from the first and second functional modes, wherein the switch includes two different states associated with the first and second functional modes, respectively and wherein in a case that the state of the switch is changed when the color illumination device is in the first functional mode and returned to an original state within a predetermined time period, the color illumination device enters the third functional mode (see fig. 5 and 6)."

As to claim 6, the Examiner states: "the third functional mode, the color illumination device repeatedly turns on and off at a predetermined cycle, and the value of the variable determines a duration time of the turning on of the color illumination device (see figs. 5-13)."

As to claim 7, the Examiner states: "the plurality of color light sources include a red LED set having a series-connected plurality of red LEDs, a green LED set having a series-connected

plurality of green LEDs, and a blue LED set having a series-connected plurality of blue LEDs, and wherein the control unit (22) includes a first, second and third switching elements each connected in series to an associated one of the red, green and blue LED sets, and a CPU for controlling the first, second and third switching elements (see fig. 7, 16, 21)."

As to claim 8, the Examiner states: "the light mixing means includes a first light diffusing member (29) and a second light diffusing member (28) interposed between the first light diffusing member (29) and the plurality of color light sources (see figs. 2, 16), the second light diffusing member having a light transmissive property."

And as to claim 9, the Examiner states: "the first light diffusing member (29) includes a cover (27) having light transmissive property."

Applicants respectfully traverse the rejection of claims 1-9 under 35 U.S.C. § 102(e) as being anticipated by Turnbull. Turnbull describes a **white-light** illuminator assembly that utilizes two perceived hues (amber and blue-green) that overlap and mix to form an illumination of one metamerically white color (see e.g., the ABSTRACT). The device of Turnbull thus provides only one color (white) and Turnbull does not describe a "color illumination device" as claimed.

In addition, the Figs. 5-13 of Turnbull appear to be used to explain the mechanism and/or requirements for the LEDs of different hues to form an effective white light, and does not show different functional modes of the LED assembly. In Figs. 3, 4A-C, 5-6 Turnbull plots the two hues in various forms, in Figs. 7-13 it is shown that Turnbull's illuminator 10 provides a metamerically white illumination that is bounded by SAE J578 Boundaries For Metameric White, in

Fig. 16 Turnbull specifically states effective white illumination projected at a distance R1, in Figs. 17-20 Turnbull plots white LED map light, and in Fig. 21 Turnbull specifically illustrates only the amber and the blue-green LEDs that produce the two hues that are at the basis of producing the single white color mentioned in the ABSTRACT and the above mentioned figures.

In direct contrast to Turnbull, independent claim 1 of the present application clearly recites a plurality of color light sources for emitting lights of at least two different colors. This element of claim 1 is clearly lacking in Turnbull. In addition, claim 1 specifies that "the color illumination device has a first functional mode in which the value of the variable determines a color of the illumination light." Turnbull lacks any disclosure of such a first functional mode and provides no control of a variable that, in the first functional mode, determines a color of the illumination light. The device of Turnbull provides only white light, and actually teaches away from providing a means to change the color from white. Turnbull's Fig. 21, which appears to be the only illustration of Turnbull's reference item 22, includes no operable color control, for example by way of a voltage adjustment. Instead, Turnbull appears to only enable the microprocessor U1 to control the LEDs D1-D5, as shown in the Fig. 21.

For all of the above-described reasons, the applicants respectfully submit that claim 1 of the present application is not anticipated by Turnbull. Accordingly, the rejection of claim 1 under 35 U.S.C. § 102(e) as being anticipated by Turnbull should be withdrawn.

Claims 2-9 each depends, either directly or indirectly, from claim 1, and is patentable over Turnbull at least on this basis. The rejections of claims 2-9 under 35 U.S.C. § 102(e) as being anticipated by Turnbull should thus be withdrawn.

In addition, claim 2 clearly recites, "the color illumination device has a second functional mode in which the color illumination light is changed periodically." The applicants can find no support in Turnbull's Fig. 21 that indicates that the control circuit (22) is capable of placing the illuminator in a second functional mode. Figs. 5-11 of Turnbull appear to the applicants to only address combining two hues (amber and blue-green) to form white light. As a result, claim 2 is distinguished over Turnbull for this additional reason.

Further, claim 4 clearly recites, "a detector for detecting an operation of the control." It is the applicants position that the microprocessor U1 of Turnbull does not detect the operation of the control but merely drives the amber (D1-D3) and blue-green (D4-D5) LEDs. Thus, claim 4 is distinguished over Turnbull for this additional reason.

Claim 5 recites "the color illumination device enters the third functional mode." Again, Turnbull does not appear to contain any suggestion of a third functional mode. As noted, Turnbull's Figs. 5 and 6 specifically relate to controlling the two hues (amber and blue-green) for producing white light. Claim 5 is therefore further distinguished from Turnbull on this basis.

Claim 6 further recites "the color illumination device repeatedly turns on and off at a predetermined cycle." The applicants find no suggestion within Figs. 5-13 that the Turnbull color illumination device repeatedly turns on and off. Instead, it appears that in Figs. 5-13

Turnbull is merely describing how Turnbull produces a metamerie white illuminator. Thus, claim 6 is distinguished over Turnbull for this additional reason.

Turning now to independent claim 10, the Examiner has stated that: "a color illumination device for producing light of various colors, including a plurality of color light sources or LEDs (14) for emitting lights of a least two different colors; a control unit (U2) for controlling the plurality of color light sources (14) a light mixing means (see fig. 9, 21) for mixing the lights emitted from the plurality of color light sources (14,114) to produce an illumination light; and a control operable by a user, wherein the color illumination device has a least two functional modes (see fig. 4C, 5-6) and a function of the control is defined for each function mode, and wherein the color illumination device further comprises a switch operable to select one of the at least two functional modes."

Further with regard to claim 11, the Examiner states: "the control is adapted to change a value of a variable, and the value of the variable is converted in an operation parameter defined for each of the functional modes (see figs. 4C, 5-6)."

As to claim 12, the Examiner states: "the at least two functional modes comprise a first functional mode in which the value of the variable is converted into a color of the illumination light (see 4C, 5-21)."

Specifically referring to claim 13, the Examiner states: "the at least two functional modes comprise a second functional mode in which the color of the illumination light is changed

periodically in a predetermined pattern, and the value of the variable is converted into a cycle of the periodic light color change (see figs. 4C, 5-21)."

Finally, referring to claim 14, the Examiner states: "the switch is adapted to provide the control unit with a signal for indicating that the switch is operated, and in response to the signal from the switch, the control unit (U2) causes a current functional mode to switch to a next functional mode in a predetermined order of the functional modes (see figs. 4C, 5-21)."

Applicants respectfully traverse the rejection of claims 10-14 under 35 U.S.C. § 102(e) as being anticipated by Turnbull. As discussed above, Turnbull describes a **white-light** illuminator assembly that utilizes two perceived hues (amber and blue-green) that overlap and mix to form an illumination of one metamerically *white* color (see the ABSTRACT). The device of Turnbull thus provides only one color (white) and Turnbull does not describe a "color illumination device."

In direct contrast to Turnbull, independent claim 10 of the present application recites a plurality of color light sources for emitting lights of at least two different colors. This element of claim 10 is clearly lacking in Turnbull. The device of Turnbull provides only white light, and actually teaches away from providing a means to change the color from white. In addition, claim 10 specifies that "the color illumination device has at least two functional modes and a function of the control is defined for each functional mode." Turnbull lacks any disclosure of at least two functional modes, and further does not define a function of the control for each such functional mode. Turnbull's Fig. 21, which appears to be the only illustration of Turnbull's reference item

22, includes no operable color control, for example by way of a voltage adjustment. Instead, Turnbull appears to only enable the microprocessor U1 to control the LEDs D1-D5, as shown in the Fig. 21.

Referring to the element of claim 10 of the present application that recites a control operable by a user, the applicants can find no support in Turnbull where Turnbull provides a color control that is operable by a user (also refer to Fig. 2 of the present application). Instead, it is the applicants' position that Turnbull teaches away from providing a control operable by a user. Turnbull's Fig. 21, which appears to be the only illustration of Turnbull's reference item 22, includes no control operable by a user. Instead, Turnbull appears to only enable the microprocessor U1 to control the LEDs D1-D5, as shown in the Fig. 21.

Thus, Turnbull fails to disclose or even suggest indicate the claim 10 feature of control operable by a user. Also, Turnbull does not suggest "a switch operable to select one of the at least two functional modes", as recited in the second wherein clause of claim 10, and as shown for example in Fig. 21 of the present application.

For all of the above-described reasons, the applicants respectfully submit that claim 10 of the present application is not anticipated by Turnbull. Accordingly, the rejection of claim 10 under 35 U.S.C. § 102(e) as being anticipated by Turnbull should be withdrawn.

Furthermore, claims 11-14 each depends, either directly or indirectly, from claim 10, and is patentable over Turnbull at least on this basis. The rejections of claims 11-14 under 35 U.S.C. § 102(e) as being anticipated by Turnbull should thus be withdrawn.

In addition, claim 11 further defines the invention wherein the control is adapted to change a value of a variable applicants' position that Figs. 4C, 5-6 teach away from a control adapted to change a value of a variable. It appears to the applicants that said figures describe the combining of two hues (amber and green-blue) to form a single color, that being white. Claim 11 is distinguished over Turnbull for this additional reason.

Further, claim 13 recites "the color illumination device has a second functional mode in which the color illumination light is changed periodically." However, the applicants can find no support in Turnbull's Fig. 21 that indicates that the control circuit (22) is capable of placing the illuminator in a second functional mode in which the color illumination light is changed periodically. Thus, claim 13 is distinguished over Turnbull for this additional reason.

Claim 14 recites, "the control unit causes a current functional mode to switch to a next functional mode in a predetermined order of the functional modes." Again, the applicants can find no support within Turnbull for a control that causes a current functional mode to switch to a next functional mode in a predetermined order of functional modes. Instead, Turnbull has one functional mode, and that is to provide white light. Claim 14 is therefore distinguished from Turnbull for this additional reason.

The applicants respectfully submit that, for all the reasons set forth above, claims 1-14 are not anticipated under 35 U.S.C. § 102(e) by Turnbull. Accordingly, favorable reconsideration of the rejection of such claims is respectfully requested.

CONCLUSION

For all the reasons described in the preceding paragraphs, the applicants respectfully submit that the present application is now in condition for allowance. Accordingly, a timely action to that end is courteously solicited.

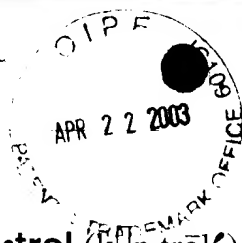
If the Examiner has any remaining questions or concerns, or would prefer claim language different from that included herein, the favor of a telephone call to the applicants' attorneys is requested.

Respectfully submitted,



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con•trol (kŏn trŏl') -trolled', -trol'ing

vt.

- 1 orig., to check or verify (payments, accounts, etc.) by comparison with a duplicate register
- 2 to regulate (financial affairs)
- 3 to verify (an experiment) by comparison with a standard or by other experiments
- 4 to exercise authority over; direct; command
- 5 to operate or regulate [this knob *controls* the volume of sound]
- 6 to hold back; curb; restrain [*control* your grief]

n.

- 1 the act or fact of controlling; power to direct or regulate; ability to use effectively [her *control* over her passions, the violinist's *control* of his vibrato]
- 2 the condition of being directed or restrained; restraint [the car went out of *control*]
- 3 a means of controlling; check [wage and price *controls*]
- 4 a standard of comparison for verifying or checking the findings of an experiment
- 5 a) an instrument or apparatus to regulate a mechanism (*usually used in pl.*) b) a device used to adjust or control [the volume *control* on an amplifier]
- 6 a spirit supposed to direct the actions and speech of a spiritualistic medium

SYN. CONDUCT, POWER

con•trol'la•bil'i•ty

n.

con•trol'la•ble

adj.

Etymology

[[ME *countrollen* < Anglo-Fr *contreroller* < Fr *contrerole* < ML *contrarotulus*, a counter, register < L *contra*, against + *rotulus*: see ROLL]]



var·i·a·ble (ver'ē bəl, var'-)
adj.

- 1 apt or likely to change or vary; changeable, inconstant, fickle, fluctuating, etc.
- 2 that can be changed or varied
- 3 *Biol.* tending to deviate in some way from the type; aberrant
- 4 *Math.* having no fixed value

n.

- 1 anything changeable; esp., a quality or quantity that varies or may vary
- 2 a shifting wind
- 3 *Astron. short for* VARIABLE STAR
- 4 *Math., Physics a)* a part of a mathematical expression that may assume any value in a specific, related set of values *b)* a symbol for such a part: opposed to CONSTANT

var·i·a·bil·i·ty or **var·i·a·ble·ness**

n.

var·i·a·bly

adv.

Etymology

[[ME < MFr < L *variabilis*]]